

Blended Learning Design for Mathematics in Schools

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Abstract

Blended Learning applications have been carried out and resulted in an increase in the learning process. However, a major challenge in the use of Blended Learning is a socio-cultural cultural difference of each region that is a form of cultural diversity. This study focused on the design of blended learning in school mathematics courses based on local culture. Thus the research will generate and develop character values that exist in the area. Preliminary analysis in this study to observe and retrieve data related to the culture and design of blended learning models that conform to the usefulness of the final results of the model would be effective. The next step is making draft models, model validation, model revision and limited test models.

Key words : Blended Learning, local wisdom, character, online, face-to-face.

1. Introduction

Some research on learning using on-line media has been encountered. However, these studies done solely for the benefit of the cognitive academic. This research will be developed to use the merger between online media and face-to-face, known as Blended Learning and using the approach of the local culture. Thus, in addition to improving cognitive abilities can also develop character (maha) students. It is hoped that with the use of technology, academic achievement and adaptability of students to ICT development and character students can be improved.

Results of research conducted concluded that an effective web-based learning ICT use in learning [17]. Supandi [11] also conducted a study on the use of a website on the subject of geometry. The study concluded that learning geometry using a website to foster students' creativity. Previous [1] also do research on the material Geometry, Geometry conclude that learning using multimedia such as videos are very effective learning can enhance the activity and motivation of learners. Characters in the learning achieved by, among others, improving student discipline and creativity positive effect on student learning outcomes [12].

The new paradigm requires performed Mathematics education innovations are integrated and continuous learning, including using ICT media. As one example of the results of research Rosenberg [5] stated that the use of ICT in delivering a series of Internet technology solutions to enhance the knowledge and skills of students. This is supported by the Ritz [10] stated that the application of technologies useful to assist learning and increase knowledge. This can be done by integrating technology into science and mathematics. While the research results Manuela Paechter, Brigitte Maier [7] shows that when the concept of science in a material or expertise in applied already obtained the student will be referred to the learning tarap face, whereas when the independent learning skills already acquired, students refer to online learning. While other studies have concluded that the teaching of ICT has implemented a good impact that can complete the learning outcomes of students and foster active learners [11]. Developing ICT program is widely recommended to improve math problem solving

skills among students in schools. In this case the exploration and investigative learning mathematics in numerical, symbolic, and graphics. Pavlik study [5] on the use of communication and information technologies for educational purposes have a positive impact on learners. Another study conducted Center for Applied Special Technology [5] states that the use of the Internet as a medium of education showed a positive impact on learning achievement of students.

On the other hand character education through a planned effort by planting system behavior values (character) to the education of citizens, which includes knowledge, awareness and volition, and actions will shape the whole person [15]. Results penelitian has been done [11] that explores the character education lesson study shows that through the character of students, among others, discipline, responsibility and able to work together can be increased. The results of this study indicate that the use of models of learning can increase and develop character.

2. Blended Learning

Blended learning is composed of blended word that has a meaning and a combination or mixture of learning means learning. Another term often used is a hybrid course, integrative learning, and multi-method study. Blended learning is learning to collaborate face-to-face learning; berbaisis learning computers (offline) which can be done by using power point, and application software such as cabri3D, cabri2D, and GeoGebra; with computer learning online (internet and mobile learning) to form an integrated learning.

This learning opportunities for teachers and students to increase opportunities to interact more because it is not constrained by the availability of hours face-to-face at school. Burden on teachers to teach lighter because students can learn a lot more independent. Class time can be used to engage students in advanced interactive experience. Meanwhile, the online portion of course can provide students with rich multimedia content at any time, anywhere. This allows for increased flexibility in scheduling for students.

Total online learning program is not recommended for learning that are still considering the need for face-to-face contact between the learners and the teachers. The composition of blended learning can use the principle of 50/50, 75/25 or 25/75 depends on the competency analysis to generate, course goals, characteristics of learners, face to face interaction, online learning delivery strategy or combination of characteristics, location of learners, characteristics and teaching ability, and available resources. Based on these aspects, teachers will be able to determine the composition (presentation) learning the most appropriate. Nevertheless, the main considerations in designing the composition of learning is the provision of learning resources suitable for a variety of student characteristics in order to learn a more effective, efficient, and attractive.

3. Research Method

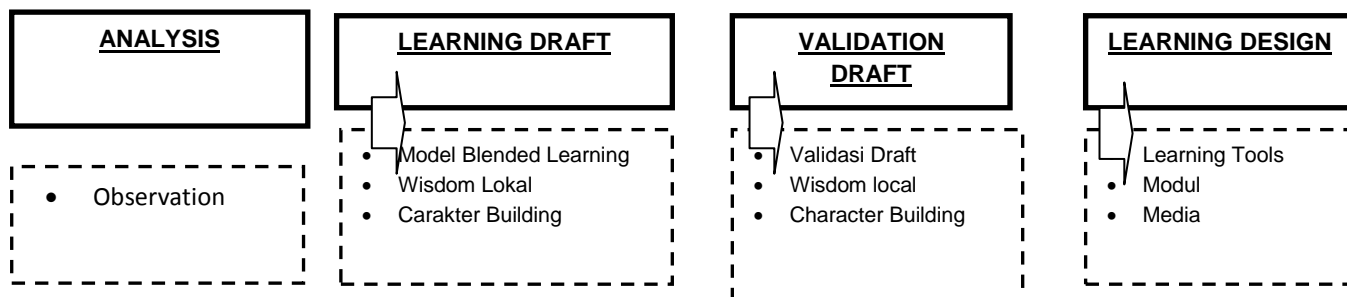


Figure 1. Research Method

From Figure 1 Stages of the research conducted, namely:

Analysis

Needs analysis was conducted to determine Blended Learning Design Learning in students. Needs analysis was conducted by observation, interviews with teachers pengampu Mathematics, and examining the results of previous studies and literature review of the books, papers, and articles.

Design Learning

At this stage of planning by drafting Learning Blended Learning Design based on local wisdom to cultivate character, preparing materials and material sources. Preparation of draft design of the learning is done in accordance with the stages of development.

Draft Validation

Results of drafting Learning Blended Learning Design based on local wisdom to foster creativity and character first tested the validity involving 3 experts consisting of one person in the School of Mathematics matter experts, one expert evaluation and learning and a multimedia expert. Validation is intended to anticipate errors in students. Matter experts to provide an assessment of the content of the material, providing learning expert assessment of learning aspect, whereas multimedia experts give an assessment of the aspects of the display and programming aspects. Data validation results matter experts, learning experts and multimedia specialists be considered to revise the Learning Design.

Draft Revision

Based validas team of experts, instructional design instructional materials and tools that have been validated to be repaired if there are discrepancies or errors in the draft, then revise the draft researchers design the study in accordance with the records and input from expert validation. The results of this revision to the student and then tested on a small scale the limited trial.

4. Result and Discussion

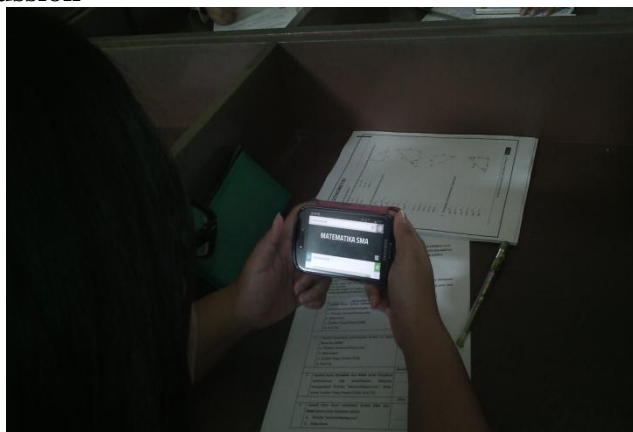


Figure 1 2. Student studied with www.matematikasma.com

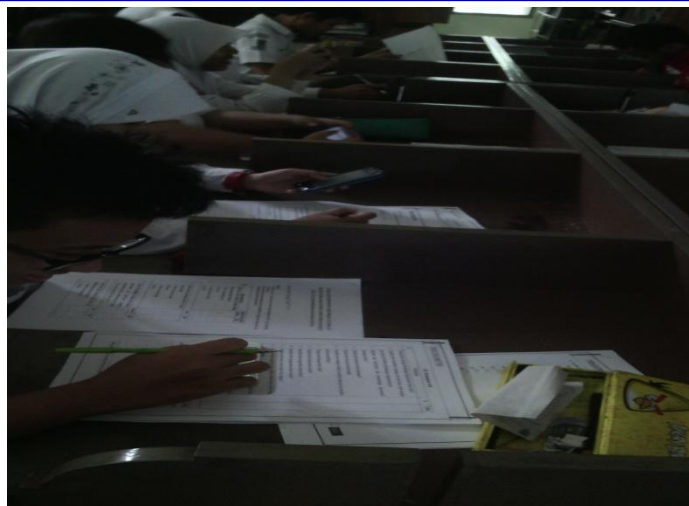


Figure 3. Student worked with “Blended learning”

Figure 2 and Figure 3 is an activity-based learning students using the Blended Learning. Legibility on student test results show that the They love to Website "matematikasma.com", Students Task Sheet, and Questions Test. For the student the book there are 20% of students who are not happy. For Website "matematikasma.com" there are 70% of students are considered new. From Table 1 legibility students towards online media and learning tools that are used throughout the data showed that students who become interested in the appearance of the respondents (writing, illustration / drawing and layout drawings), which is contained in the website "matematikasma.com". Of all the devices are presented to the respondents, there are some words that have not been known by the students are: convert, circular arcs, and the term local terms associated with the local culture

Readability analysis

Table 1 Response Questionnaire Sheet Students Against Readability

Table 1. Response Questionnaire Sheet Students' Reading			
No.	Aspects of the response	Respon siswa	
		Like	No
1.	Do you feel happy or not the learning component of the following?		
	a. Website “matematikasma.com”	100%	0%
	b. Books students	80%	20%
	c. Students Task Sheet	100%	0%
	d. Test Problem	100%	0%
		New	No
2.	Are you interested or not to participate in learning, if learning is presented using the Website "matematikasma.com", Book students, Students Task Sheet, Test Problem	100%	0%
		clear	No
3.	Whether or not you can understand the intent of each question / problem that is presented in:		

	a. Website “matematikasma.com”	100%	0%
	b. Students Task Sheet	80%	20%
	c. Problem Test	80%	20%
		interested	<i>No</i>
4.	Are you interested or not by appearance (text, illustrations / drawings and layout drawings), which is contained within the website “matematikasma.com”	100%	0%

5. Conclusion

Design of Blended Learning based high school math teaching device produces, among others, Lesson Plan (RPP) and the Student Worksheet (LKS). With Blended Learning more interested in learning and students can search for their own learning resources that support the material presented in class. Thus it can be cultivated naturally is tanggung responsible and independent. Finally, students will be creative and can be a teacher and student for himself.

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